

What is claimed is:

~~Detector~~ → ASA (WSE) → alarm

1. A monitoring device used between a reaction equipment and a portable alarm, the monitoring device comprising:

a detector detecting the reaction action proceeded in the reaction equipment and outputting a detected value;

an abnormal state assessor in communication with the detector, giving an abnormal signal when the detected value is in the range of an abnormal state; and

a wireless signal emitter in communication with the abnormal state assessor, transmitting a wireless signal when receiving the abnormal signal, the wireless signal being received by the portable alarm and the portable alarm giving a warning signal to inform the user carrying with it.

* Reaction equipment & alarm not positively stated

2. The monitoring device as described in claim 1, wherein the detector is at least one of a temperature detector, a pressure detector, an oxygen content detector, a pH value detector, a whisking speed detector, a gas flux detector, a liquid level detector, a transfusion device detector, a valve ON-and-OFF detector, a power cut detector, a cell density detector, a gas detector, a slotware or pipeline breakage detector, a dextrose or sucrose detector or an online real-time analytical sampling device detector, the detector detecting the reaction action proceeded in the reaction equipment and outputting at least one of a detected temperature value, a detected pressure value, a detected oxygen content value, a

12
13

[Handwritten signature]

detected pH value, a whisking speed variation control signal, a gas flux variation control signal, a liquid level variation control signal, a transfusion device control signal, a value ON-and-OFF control signal, a power cut responsive control signal, a cell density variation control signal, a gas concentration control signal, a slotware or pipeline breakage responsive control signal, a dextrose or sucrose variation control signal or an online real-time analytical sampling device control signal.

3. The monitoring device as described in claim 1, wherein the abnormal state assessor gives the abnormal signal only when the detected value exceeds a normal range.

4. The monitoring device as described in claim 1, wherein the reaction equipment is a chemical reaction equipment, a fermentation reaction equipment, a microbe culture equipment, a polymerase chain reaction, a reverse transcriptase polymerase chain reaction, a real time polymerase chain reaction or a separation purification equipment.

5. The monitoring device as described in claim 1, wherein the portable alarm, which the monitoring device is applied to, comprises:

a warning signal generator giving a warning signal in response to the abnormal signal, the warning signal being in the form of sound, ray or vibration;

Cannon
20020146817
58
69

14
8

10637091

6287438
5640954
20020146817
6946246
3937615
6923936
6780297

a display displaying corresponding system abnormal information in response to the abnormal signal;

an input device allowing the user to input instructions; and

a wireless control signal generator in communication with the input device, transmitting a wireless control signal to the reaction equipment in response to the instructions entered by the user so that the reaction action proceeded in the reaction equipment may be adjusted.

6. A control system used for reaction equipment, comprising:

a detector detecting the reaction action proceeded in the reaction equipment and outputting a detected value;

an abnormal state assessor in communication with the detector, giving an abnormal signal when the detected value is in the range of an abnormal state;

a wireless signal emitter in communication with the abnormal state assessor, transmitting a wireless signal when receiving the abnormal signal; and

a portable alarm giving a warning signal after receiving the wireless signal, so that the user who carries with it may be informed.

7. The control system as described in claim 6, wherein the detector is at least one of a temperature detector, a pressure detector, an oxygen content detector, a pH value detector, a whisking speed detector, a gas flux detector, a liquid level detector, a transfusion device detector, a valve ON-and-OFF detector, a power

cut detector, a cell density detector, a gas detector, a slotware or pipeline breakage detector, a dextrose or sucrose detector or an online real-time analytical sampling device detector, the detector detecting the reaction action proceeded in the reaction equipment and outputting at least one of a detected temperature value, a detected pressure value, a detected oxygen content value, a detected pH value, a whisking speed variation control signal, a gas flux variation control signal, a liquid level variation control signal, a transfusion device control signal, a value ON-and-OFF control signal, a power cut responsive control signal, a cell density variation control signal, a gas concentration control signal, a slotware or pipeline breakage responsive control signal, a dextrose or sucrose variation control signal or an online real-time analytical sampling device control signal.

8. The control system as described in claim 6, wherein the reaction equipment, which the control system is applied to, is a chemical reaction equipment, a fermentation reaction equipment, a microbe culture equipment or a separation purification equipment.

9. The control system as described in claim 6, wherein the portable alarm comprises a warning signal generator giving a warning signal in response to the abnormal signal, the warning signal being in the form of sound, ray or vibration.

10. The control system as described in claim 9, wherein the portable alarm further comprises a display displaying corresponding system abnormal information in response to the abnormal signal.

11. The control system as described in claim 10, wherein the portable alarm further comprises:

an input device allowing the user to input instructions; and

a wireless control signal generator in communication with the input device, transmitting a wireless control signal to the reaction equipment in response to the instructions entered by the user so that the reaction action proceeded in the reaction equipment may be adjusted.

12. The control system as described in claim 6, wherein the control system is connected to a computer for receiving and recording the detected value and the abnormal signal.

13. The control system as described in claim 12, wherein the control system is connected to the computer by means of wired signal transmission or wireless signal transmission.

14. A monitoring device used between a reaction equipment and a portable alarm, the monitoring device comprising:

a ~~detector~~ detecting the reaction action proceeded in the reaction equipment and outputting a detected value; and

a wireless signal emitter in communication with the detector, transforming the detected value into a wireless signal and transmitting the wireless signal to the portable alarm, the portable alarm displaying the signal after receiving the wireless signal for the user's reference who carries with it.

15. The monitoring device as described in claim 14, wherein the detector is at least one of a temperature detector, a pressure detector, an oxygen content detector, a pH value detector, a whisking speed detector, a gas flux detector, a liquid level detector, a transfusion device detector, a valve ON-and-OFF detector, a power cut detector, a cell density detector, a gas detector, a slotware or pipeline breakage detector, a dextrose or sucrose detector or an online real-time analytical sampling device detector, the detector detecting the reaction action proceeded in the reaction equipment and outputting at least one of a detected temperature value, a detected pressure value, a detected oxygen content value, a detected pH value, a whisking speed variation control signal, a gas flux variation control signal, a liquid level variation control signal, a transfusion device control signal, a valve ON-and-OFF control signal, a power cut responsive control signal, a cell density variation control signal, a gas concentration control signal, a slotware or pipeline breakage responsive control signal, a dextrose or sucrose variation control signal or an online real-time analytical sampling device control

signal.

16. The monitoring device as described in claim 14, ~~wherein the monitoring~~ device further comprising an abnormal state assessor connection between the detector and the wireless signal emitter.

17. The monitoring device as described in claim 16, wherein the abnormal state assessor gives the abnormal signal only when the detected value exceeds a normal range.

18. The monitoring device as described in claim 14, wherein the reaction equipment is a chemical reaction equipment, a fermentation reaction equipment, a microbe culture equipment, a polymerase chain reaction, a reverse transcriptase polymerase chain reaction, a real time polymerase chain reaction or a separation purification equipment.

19. The monitoring device as described in claim 14, wherein the portable alarm, which the monitoring device is applied to, comprises:

a warning signal generator giving a warning signal in response to the detected value, the warning signal being in the form of sound, ray or vibration;
and

a display displaying the detected value.

20. The monitoring device as described in claim 19, wherein the portable alarm, which the monitoring device is applied to, further comprises:

an input device allowing the user to input instructions; and

a wireless control signal generator in communication with the input device, transmitting a wireless control signal to the reaction equipment in response to the instructions entered by the user so that the reaction action proceeded in the reaction equipment may be adjusted.

21. A control system used for a reaction equipment, comprising :

a detector detecting the reaction action proceeded in the reaction equipment and outputting a detected value;

a wireless signal emitter in communication with the detector, transforming the detected value into a wireless signal and transmitting the wireless signal; and

a portable alarm displaying the signal after receiving the wireless signal for the user's reference who carries with it.

22. The monitoring device as described in claim 21, wherein the detector is at least one of a temperature detector, a pressure detector, an oxygen content detector, a pH value detector, a whisking speed detector, a gas flux detector, a liquid level detector, a transfusion device detector, a valve ON-and-OFF detector, a power cut detector, a cell density detector, a gas detector, a slotware or

pipeline breakage detector, a dextrose or sucrose detector or an online real-time analytical sampling device detector, the detector detecting the reaction action proceeded in the reaction equipment and outputting at least one of a detected temperature value, a detected pressure value, a detected oxygen content value, a detected pH value, a whisking speed variation control signal, a gas flux variation control signal, a liquid-level variation control signal, a transfusion device control signal, a value ON-and-OFF control signal, a power cut responsive control signal, a cell density variation control signal, a gas concentration control signal, a slotware or pipeline breakage responsive control signal, a dextrose or sucrose variation control signal or an online real-time analytical sampling device control signal.

23. The monitoring device as described in claim 21, wherein the monitoring device further comprising an abnormal state assessor connection between the detector and the wireless signal emitter.

24. The monitoring device as described in claim 23, wherein the abnormal state assessor gives the abnormal signal only when the detected value exceeds a normal range.

25. The monitoring device as described in claim 21, wherein the reaction equipment is a chemical reaction equipment, a fermentation reaction equipment,

a microbe culture equipment, a polymerase chain reaction, a reverse transcriptase polymerase chain reaction, a real time polymerase chain reaction or a separation purification equipment.

26. The monitoring device as described in claim 21, wherein the portable alarm, which the monitoring device is applied to, comprises:

a warning signal generator giving a warning signal in response to the detected value, the warning signal being in the form of sound, ray or vibration;
and

a display displaying the detected value.

27. The monitoring device as described in claim 26, wherein the portable alarm, which the monitoring device is applied to, further comprises:

an input device allowing the user to input instructions; and

a wireless control signal generator in communication with the input device, transmitting a wireless control signal to the reaction equipment in response to the instructions entered by the user so that the reaction action proceeded in the reaction equipment may be adjusted.

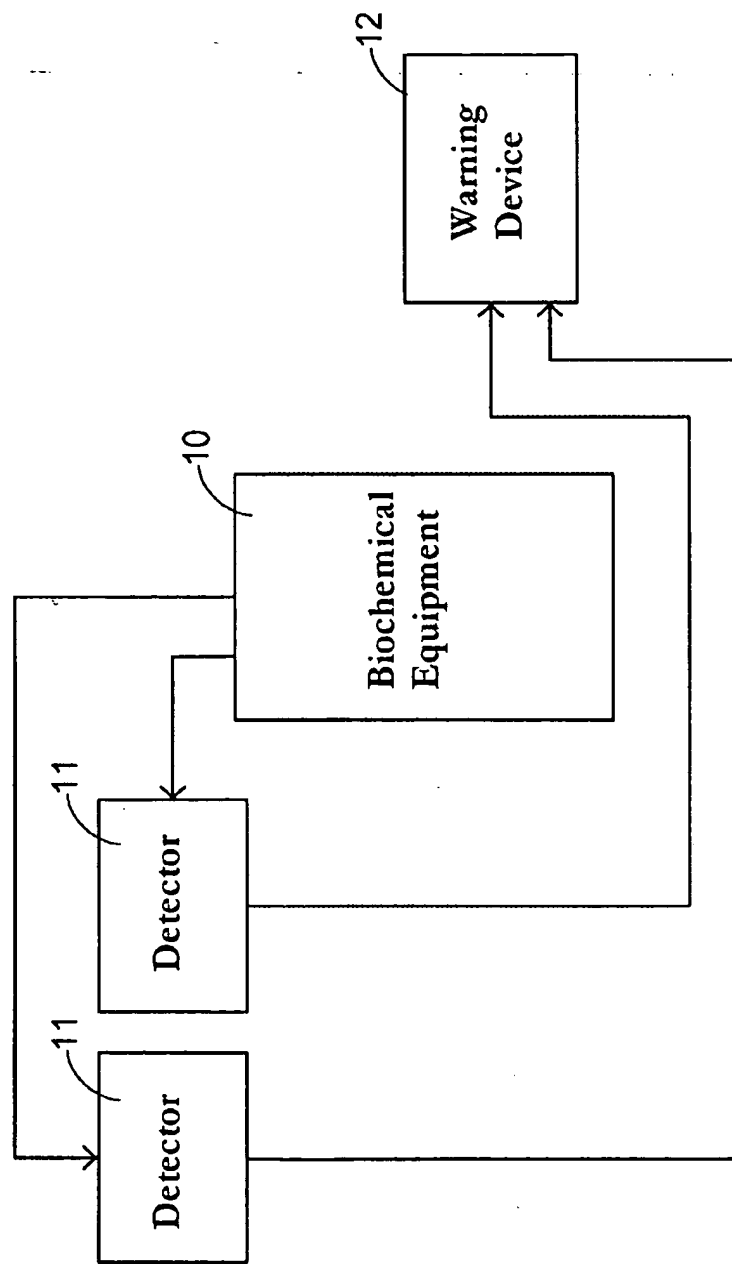


Fig. 1

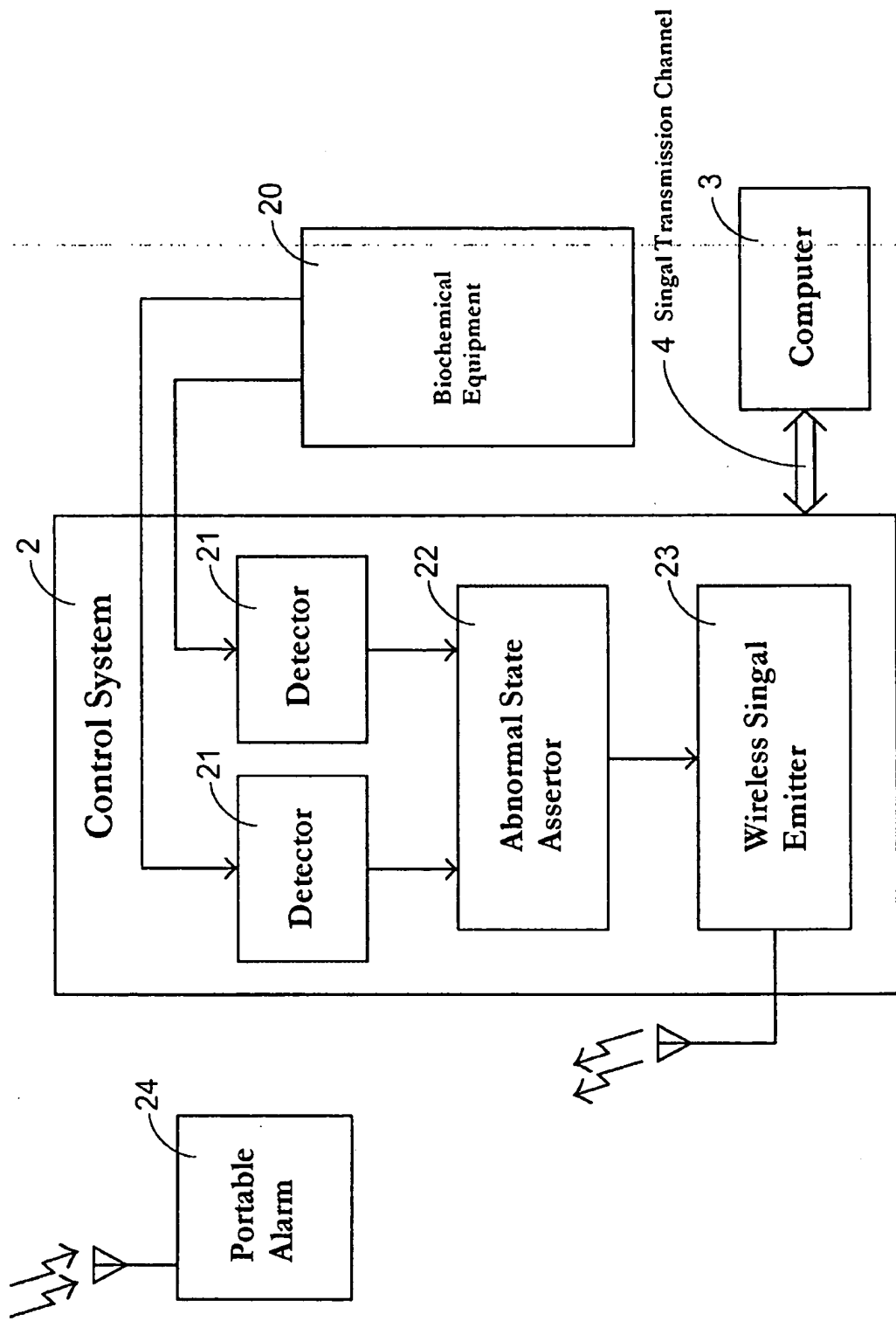


Fig. 2

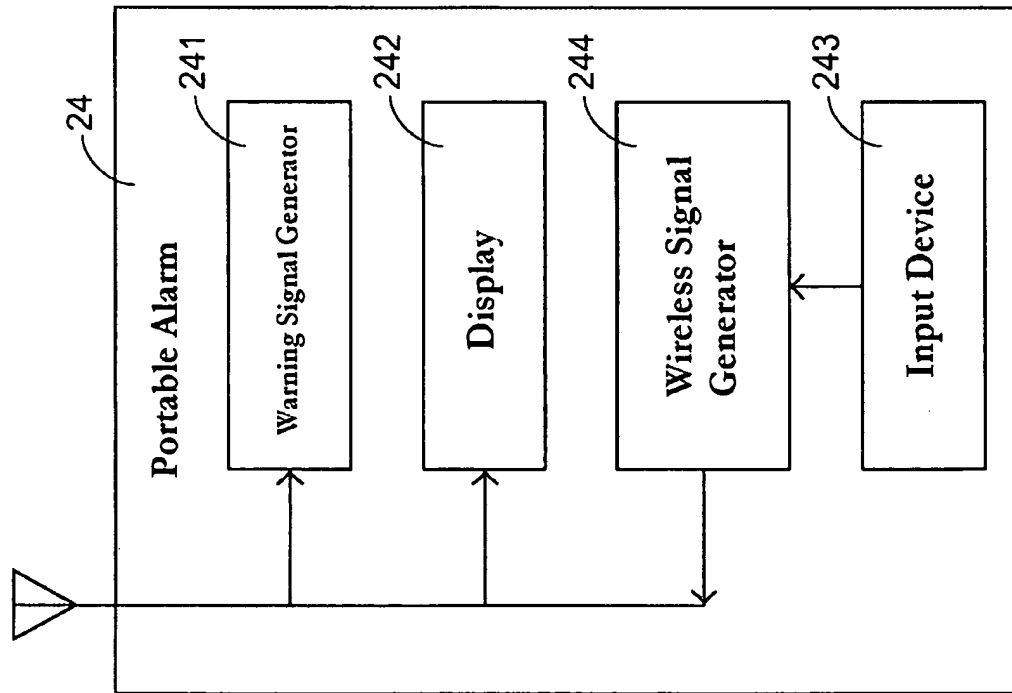


Fig. 3

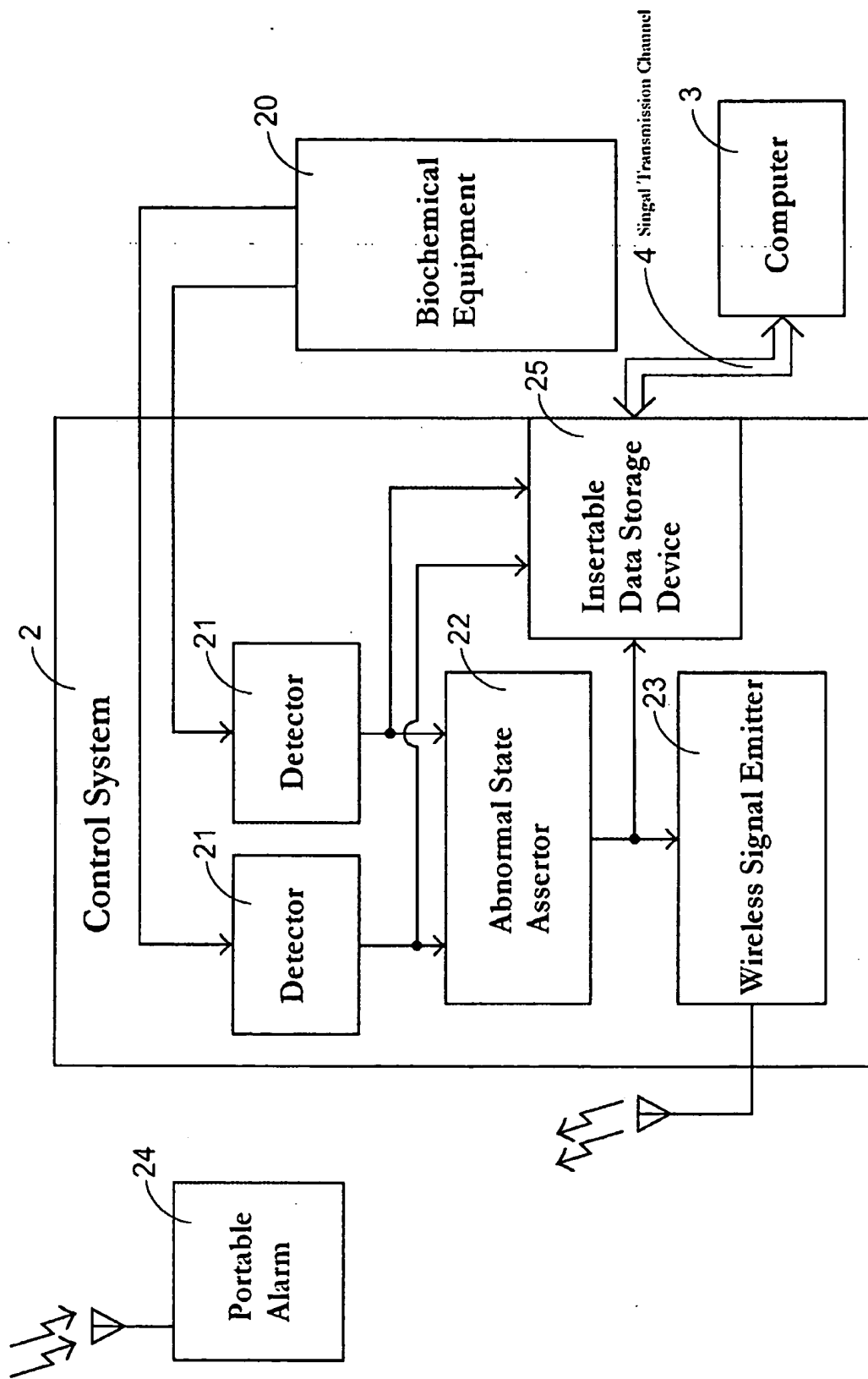


Fig. 4